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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/643,004	08/21/2000	Garry A. Mercaldi	MI22-1358	8352
21567	7590	04/06/2005	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			MALDONADO, JULIO J	
			ART UNIT	PAPER NUMBER

2823

DATE MAILED: 04/06/2005


Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/643,004

Applicant(s)

MERCALDI, GARRY A. 

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-41 and 47-69 is/are pending in the application.
- 4a) Of the above claim(s) 52, 53, 55-57 and 59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9, 13-18, 21, 22, 25-33, 35, 37-41, 47, 48, 50, 54, 58, 64 and 68 is/are rejected.
- 7) ☒ Claim(s) 10-12, 19, 20, 23, 24, 34, 36, 49, 51, 60-63, 65-67 and 69 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20050106</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 13-18, 21, 22, 25-33, 35, 37-41, 47, 48, 50, 54, 58, 64 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zenke (U.S. 6,258,690 B1) in view of Nogami et al. (U.S. 6,060,383).

Zenke (Figs.1A-5E) teaches a method of forming a nucleation layer (5) for a dielectric layer (6) used to form a capacitor, wherein said nucleation layer (5) is formed on a first surface and a second surface of a substrate (1), wherein the first surface is SiO₂ dielectric layer (2) and the second surface is a polysilicon electrode (3) and said process is performed in a single chamber or multiple chamber apparatus. This process include the steps of forming an LPCVD-amorphous silicon layer (4) on said first and second surface; performing a thermal nitridation on said amorphous silicon (4), turning it into a Si₃N₄ nucleation layer (5); and forming an LPCVD Si₃N₄ layer (6), wherein said LPCVD Si₃N₄ layer (6) is deposited non-selectively on the first surface and on the second surface, even though the first and second surfaces of the substrate (1) exhibit a property of the deposition layer forming less readily on the first surface compared to the second surface, wherein the method is performed in situ or ex situ (column 2, line 43 – column 3, line 19, column 3, line 63 – column 4, line 4 and column 5, lines 34 – 60).

Zenke fails to teach forming the deposition layer by an ALD process. However, Nogami et al. teach depositing silicon nitride on a first surface of SiO_2 and on a second surface of polysilicon (column 6, lines 43 – 67) using either an ALD process or a CVD process (column 8, lines 20 – 43). It would have been within the scope of one of ordinary skill in the art to combine the teachings of Zenke and Nogami et al. to enable the deposition step of Zenke to be performed according to the teachings of Nogami et al. because one of ordinary skill in the art at the time the invention was made would have been motivated to look to alternative suitable methods of performing the disclosed deposition step of Zenke and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

The combined teachings of Zenke and Nogami et al. substantially teach all aspects of the invention but fail to disclose wherein the CVD deposition of the nucleation layer occurs non-selectively at a temperature no greater than about 645°C and at a pressure of from about 0.5 Torr to about 1.5 Torr; and wherein the ALD nucleation layer is deposited at a temperature of from about 400 to about 550°C and at a pressure of from about 0.1 Torr to about 20 Torr. However, the selection of the deposition specifications is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species to obtain a desired layer formation process. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the above-mentioned layer formation specifications to arrive at the claimed invention.

The combined teachings of Zenke and Nogami et al. fail to teach wherein the thickness of the nucleation layer is less than 6 Angstroms. Notwithstanding, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Allowable Subject Matter

3. Claims 10-12, 19, 20, 23, 24, 34, 36, 49, 51, 60-63, 65, 66, 67 and 69 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Julio J. Maldonado whose telephone number is (571) 272-1864. The examiner can normally be reached on Monday through Friday.

5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax number for this group is 703-872-9306 for before final submissions, 703-872-9306 for after final submissions and the customer service number for group 2800 is (703) 306-3329.

Updates can be found at <http://www.uspto.gov/web/info/2800.htm>.

Julio J. Maldonado
Patent Examiner
Art Unit 2823

Julio J. Maldonado
April 4, 2005


George Fourson
Primary Examiner